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14. ABSTRACT The Roswell Park/Howard University Prostate Cancer Scholars Program is designed to encourage students from under-represented minority groups to enter graduate training and ultimately careers in prostate cancer research. The three-phased program combines elements of pre-internship tele-mentoring, mentored summer research experience and post-internship mentoring activities in order to: (1) inform a student's decisions regarding graduate training, (2) motivate the pursuit of prostate cancer research with an emphasis in cancer health disparities and (3) support successful entry, transition and retention into graduate training. Eight Howard University students were accepted and enrolled in the program in PGY1. Four of these students were Honors sophomores and are currently progressing through the preparatory tele-mentoring phase of the program prior to their summer internship at the end of their junior year in 2016. Four of these students were accepted as non-honors juniors and comprise a cohort which completed an abbreviated 1 spring semester of tele-mentored readings preparation. Three of the four non-Honors juniors continued on to complete the second phase of the program- the 10 week summer experience at Roswell Park Cancer Institute. These three students will be attending and presenting their summer's research at the Society for Basic Urologic Research (SBUR) scientific conference in November.					
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1. Introduction:

There is an abundance of evidence that prostate cancer occurs at an earlier age and at a more aggressive form in African-American men versus the rest of the population. This disproportionate burden is due in part to biological, educational, socio-economic and healthcare disparities. Concomitant to these health disparities is the under-representation of minority healthcare and research professionals to address such challenges. The Roswell Park/Howard University Prostate Cancer Scholars Program (RHPCS) aims to encourage students from under-represented minority groups to enter graduate training, and ultimately, careers in prostate cancer research. The RHPCS program expands the pre-existing academic partnership between Roswell Park Cancer Institute (RPCI) and Howard University (HU) to immerse students in a mentor supported comprehensive prostate cancer research experience which integrates three elements of training activities- (1) pre-internship tele-mentored Directed Readings, (2) a core summer research experience internship and (3) post-internship mentored professional activities. Pre-internship tele-mentored Directed Readings provide scholars with knowledge in basic prostate cancer biology and familiarizes them with the research mentor's area of research in order to formulate a summer research project and facilitate a smooth transition into a productive summer research experience. Central to the training program is the ten week summer research experience during which time scholars will work on their research project, attend accompanying co-curricular activities and present a capstone talk and poster of their research results. Scholars receive extended mentoring and advisement in preparation for presenting their research at a national conference and entry into graduate school. The value of RHPCS Program for encouraging and preparing minority students for a career in prostate cancer research will be measured in the short term by the number of RHPCS participants entering graduate training and the in the long term by the number entering professions related to prostate cancer.

- 2. Keywords:** Howard University, Roswell Park Cancer Institute, prostate cancer, tele-mentored directed readings, undergraduate summer research experience

3. Accomplishments:

What were the major goals of the project?

The following are major goals for the project per the approved SOW:

SOW-Specific aim 1: Encourage undergraduate students at Howard University to pursue graduate training in prostate cancer research.

SOW-Specific aim 2: Prepare Prostate Cancer Scholars for mentored research experiences at RPCI.

SOW-Specific aim 3: Provide mentored research, scholarly and professional development experiences.

SOW-Specific Aim 4: Test value of RHPCS Program to encourage interns to enter graduate training and careers in prostate cancer research.

Completion dates for activities and progress on milestones:

The components of the approved statement-of-work (SOW) are listed in chronological order. Scheduled activity completion dates and milestones per the SOW are shown in *italics*. The scheduled completion dates use the same convention on the SOW for defining the project year and months in which the tasks will be completed- *Project Year : starting month-ending month*. Actual completion dates and percentage of progress on milestone completion accomplished during this reporting period are in bold.

SOW-Specific aim 1: Encourage undergraduate students at Howard University to pursue graduate training in prostate cancer research.

SOW-Major task 1: Promote RHPCS Program to Howard University undergraduate students.

SOW-Task 1a. RHPCS program brochure and promotional materials are disseminated to Howard University biology students. The Project Director and Faculty Advisor coordinate a recruitment visit to Howard University by RPCI's project leadership team and an RHPCS mentor. The mentor presents a prostate cancer research seminar and the leadership team and mentor conduct informational sessions on the RHPCS program and graduate training at RPCI.

- *Scheduled completion – Recruitment trip and promotion: Trip 1: PGY1:1-2; Trip 2: PGY2:13-14*
- Actual completion: Recruitment trip 1: **10-07-14** & Recruitment trip2: **9-9-15** (PGY1)*

*Note: The second recruitment trip was planned earlier and within the same program year as the first trip.

SOW-Task 1b. HU students apply to RHPCS program. Applications are reviewed for eligibility and applicants are matched with mentors.

- *Scheduled completion, PGY 1:3-4*
- Actual completion, **11-29-14**

SOW-Milestone 1: Enrollment of 5 Howard University students into RHPCS Program per project year

Target total of 15 enrollments for three years:

5 students in PGY1, 2014 cohort juniors (1 semester tele-mentored readings, Summer internship PGY1)

5 students in PGY1, 2014 cohort honors sophomores (3 semester tele-mentored readings, Summer internship PGY2)

5 students in PGY2, 2015 cohort honors sophomores (3 semester tele-mentored readings, Summer internship PGY3)

**If necessary to make up for loss to attrition:*

Up to 5 students in PGY3, 2016 cohort juniors (1 spring semester tele-mentored readings, Summer internship PGY3)

Actual PGY1:

4 students enrolled in the 2014 cohort juniors

4 students enrolled in the 2014 cohort honors sophomores

Progress toward overall project Milestone 1: **53%** completed

SOW-Specific aim 2: Prepare Prostate Cancer Scholars for mentored research experiences at RPCI

SOW-Major task 2: Arrange pre-internship tele-mentorships between mentors and Prostate Cancer Scholars

SOW- Task 2a. The Project Director and Faculty Advisor arrange connections between RPCI mentors and Prostate Cancer Scholars on the existing RPCI web conference software and monitor progression of tele-mentorships. The Faculty Advisor conducts an informational session with RPCI mentors via web conference on the “Directed Readings” course syllabus, format, assessment and expectations.

The Directed Readings Course is offered to Honors Sophomores and spans three semesters (1 fall and 2 spring) prior to the summer research experience. Non-honors juniors will conduct 1 spring semester of tele-mentorship prior to their summer research experience.

- Scheduled completion, PGY1: 5-8
- Actual completion, **4-23-15**

SOW-Milestone 2: Howard Prostate Cancer Scholars learn prostate cancer biology, become familiar with mentor’s publications and research goals, develop pre-internship relationship with mentors and lab staff and formulate initial scope of summer research work.

Target total of 35 semesters of tele-mentored scientific readings for 3 years

One semester tele-mentored readings by non-honors juniors: 5 juniors x 1 Semester= 5 semesters

Three semester tele-mentored Directed Readings course by Honors Sophomores: 10 sophomores x 3 semesters= 30 semesters

Actual:

- **8 semesters**= (4 2014 cohort juniors x 1 semester)+ (4 2014 cohort honors sophomores x 1 semester)

Progress toward overall project Milestone 2- **22.0%** completed.

SOW-Specific aim 3: Provide mentored research, scholarly and professional development experiences.

Major task 3: Howard Prostate Cancer Scholars conduct 10-week mentored prostate cancer research experience at RPCI.

3a RPCI mentors supervise Prostate Cancer Scholars in summer research projects. The Project Director provides administrative support for internship enrollment, lodging arrangements, co-curricular activities, research project deadlines, research symposium and pre-/post- program assessments.

- Scheduled Completion- PGY1:9-12
- Actual completion: **8-7-15**

SOW- Milestone 3: Prostate Cancer Scholars obtain an immersive experience in prostate cancer research, produce a summer research project and present their research project in poster and oral formats

Target total of 15 Prostate Cancer Scholars receive immersive research experiences over three years:

5 students in PGY1, 2014 cohort juniors

5 students in PGY2, 2014 cohort honors sophomores

5 students in PGY3, 2015 cohort honors sophomores

**If necessary to make up internships due to attrition:*

Up to 5 students, PGY3, 2016 cohort juniors

Actual:

- **3** students in 2014 cohort juniors completed summer research experiences in PGY1

Progress toward overall project Milestone 3- **20%** completed

SOW-Specific Aim 4: Test value of RHPCS Program to encourage interns to enter graduate training and careers in prostate cancer research.

SOW-Major Task 4: Track Prostate Cancer Scholar professional activities.

4a Attendance and research presentation at conferences are arranged for Scholars and either PI, Faculty Advisor or mentor.

Not covered by this reporting period.

SOW-Task 4b-*The Faculty Advisor obtains Prostate Cancer Scholar's retrospective evaluation of RHPCS program and post-graduate education pursuits and reports to the Project Director.*

Not covered by this reporting period.

*Note, the approved SOW shows that this task would be accomplished in month seven of Project Year 1, this is an error and needs to be amended since the timing of this activity would have occurred before the summer internship phase of the program. Reporting on academic pursuits and retrospective evaluation will take place in the April following the program phase sequence for each cohort.

SOW-Task 4c-*The Project Director administers the "Alumni Achievement" surveys to alumni and track short term (1 year) and long term (2 -3 year) education and career attainment.*

Not covered by this reporting period.

SOW-Milestone 4-*The education attainment, career progress and professional achievements of program alumni are tracked.*

Progress toward overall project milestone 4: **0%** completed.

What was accomplished under these goals?

Eight HU students were selected from applicant pool of eleven students and confirmed their acceptance as *Prostate Cancer Scholars* into the RHPCS program. This project year 1(PGY1) class consists of two cohorts: four *2014 cohort honors sophomores* and four *new juniors*. Three of the *2014 cohort juniors* completed the summer research experience phase of the program and four *2014 cohort honors sophomores* are currently progressing through the second sequence of the three-semester tele-mentored Directed Readings course. The table below summarizes the recruitment of students into the program and their progression as cohorts through the three phases of the program:

	Grant Year 1 (2014-2015)				Scientific Conference
	Applied	Offers	Tele-Mentored	Summer Internships	
2014 cohort honors sophomores	7	5	4	n/a	n/a
2014 cohort juniors	4	4	4	3	n/a
Year Totals		9	8	3	n/a

Table 1: Progression of Prostate Cancer Scholars through the RHPCS program

Prostate Cancer Scholar progression is tracked through the phases of the program. Students are defined by cohort year and honors program status: *2014 cohort honors*

sophomores refers to Howard students enrolled in the Honors program and beginning the first of their two year-long program in which they will receive three semesters of tele-mentored Directed Readings prior to a summer research experience in their junior year followed by a presentation at a scientific conference. *2014 cohort juniors* refers to current juniors with no honors requirement, who were accepted into an abbreviated one year long version of the program in which they receive one spring semester of tele-mentored readings followed by a summer internship and a presentation at a science conference. This abbreviated program served to facilitate filling summer internship positions in project year 1 and supplementing the applicant pool to compensate for attrition or positions left unfilled during a recruitment cycle.

Specific objectives, major activities, significant results and key outcomes.

The specific aims and major tasks from the SOW are restated below (in italics) with the corresponding major activities, significant results and key outcomes covered under the first project year reporting period.

SOW-Specific aim 1: Encourage undergraduate students at Howard University to pursue graduate training in prostate cancer research.

SOW-Major task 1: Promote RHPCS Program to Howard University undergraduate students.

Task 1a.- RHPCS program brochure and promotional materials are disseminated to HU biology students. The Project Director and Faculty Advisor coordinate a recruitment visit to Howard University by RPCI's project leadership team and an RHPCS mentor. The mentor presents a prostate cancer research seminar and the leadership team and mentor conduct informational sessions on the RHPCS program and graduate training at RPCI.

Major activities- On October 9 2014, Dr. Wendy Huss (Principal Investigator), Adam Kisailus (Project Director) and Richard Hersherberger (Co-Principal Investigator) visited Howard University to introduce Howard University students to the Roswell Park Cancer Institute/Howard University *Prostate Cancer Scholars Program* (RHPCS.) Dr. Huss gave a lecture to an audience of biology majors on the topic of Prostate Cancer – “Targeting Prostate Cancer Stem Cells.” Following the talk, both honors sophomores and non-honors juniors were invited to attend an hour-long informational session on the RHPCS program. Non-honors juniors were included as eligible applicants to expand the pool for satisfying budgeted internship placements in the first program year stipend-supported summer research experience. These students would receive one semester (Spring 2015) of tele-mentored readings on pertinent scientific literature and formulate their research project for the summer research experience at Roswell Park Cancer Institute in PGY1. Students received a printed brochure with program details including a directory of available mentors and web address directing them to the on-line application. The second recruitment trip took place in the same project year (PGY1) on September 9, 2015. This earlier trip resulted in an earlier application deadline to allow more time for students to make decisions about confirming acceptances into the program. Dr. Irwin Gelman, a mentor on the project, presented to students on the topic of: “How scaffolding proteins control cancer metastasis by regulating the time and place of oncogenic kinase signaling.” Honors sophomores attended program informational

sessions. Juniors were again eligible to apply to the program without an honors requirement in order to expand the applicant pool. Dr. Anna Allen, the HU faculty advisor provided email reminders and advertisements about the program during the application cycle to attract applications from students.

Significant results and key outcomes- Students received a seminar about prostate cancer research and informational sessions about the RHPCS program.

SOW-Task 1b. *Howard University students apply to RHPCS program. Applications are reviewed for eligibility and applicants are matched with mentors.*

Major Activities- Applicants to the RHPCS program reviewed a catalogue of research projects made available RPCI faculty members participating as mentors. They selected four projects based on interests. Applicants were validated for eligibility requirements. Following this initial screening process, RPCI faculty reviewed and scored applications of those students who chose their particular research offering on the application. Applicants were rated on two factors- (1) fit for the mentor's particular research and (2) overall quality of fit for the RHPCS. Mentors and *Prostate Cancer Scholars* were matched based on their mutual rankings of each other.

Key outcomes and results- Eleven applications were elicited from HU Biology students. The applicant pool was comprised of four non-honors juniors and seven honors sophomores (see table 1.) Nine HU students were accepted and matched with RPCI prostate research faculty mentors. Eight of the nine students confirmed their acceptance in the program and one declined with no reason given. Four students were enrolled in the *2014 cohort juniors* and four in the *2014 cohort honors sophomore* (see table 1.)

SOW-Specific aim 2: Prepare Prostate Cancer Scholars for mentored research experiences at RPCI

SOW-Major task 2: *Arrange pre-internship tele-mentorships between mentors and Prostate Cancer Scholars*

SOW- Task 2a. *The Project Director and Faculty Advisor arrange connections between RPCI mentors and Prostate Cancer Scholars on the existing RPCI web conference software and monitor progression of tele-mentorships. The Faculty Advisor conducts an informational session with RPCI mentors via web conference on the "Directed Readings" course syllabus, format, assessment and expectations.*

Major activities-The tele-mentoring of *Prostate Cancer Scholars* commenced in the 2015 spring semester. The Project Director and Faculty Advisor at HU conducted an orientation on tele-mentorship via web conference for Roswell Park mentors and Howard University students. This orientation covered the following topics: tele-mentoring schedule, expectations of mentor & mentee, academic objectives, expectations and academic objectives of Directed Readings course sequence. RPCI mentors and Prostate Cancer Scholars convened weekly or bi-weekly web-conference-supported meetings to critically dissect and discuss prostate cancer research papers.

Key outcomes and results- Eight Prostate Cancer Scholars completed one spring semester of tele-mentored readings. Four 2014 honors sophomores cohort in the Directed Readings I course submitted a report on papers read during the semester accompanied by bibliography of eight citations. Four non-honors juniors conducting the

abbreviated 1 spring semester of tele-mentored readings submitted a bibliography of scientific papers and a proposal of their summer research project.

SOW-Specific aim 3: Provide mentored research, scholarly and professional development experiences.

SOW-Major task 3: Howard Prostate Cancer Scholars conduct 10-week mentored prostate cancer research experience at RPCI.

SOW-Task 3a *RPCI mentors supervise Prostate Cancer Scholars in summer research projects. The Project Director provides administrative support for internship enrollment, lodging arrangements, co-curricular activities, research project deadlines, research symposium and pre-/post- program assessments.*

Major activities- HU Prostate Cancer Scholars received a ten week immersive research experience in their mentor's research laboratory. Prostate Cancer Scholars were registered as interns in the *Summer Research Internship Program at RPCI*. Dormitory housing arrangements were made at Canisius College. They were on-boarded with RPCI and receive ID badge swipe access and email/IT logon accounts. *Prostate Cancer Scholars* received a summer program orientation and schedule of program required activities to familiarize and inform them of program expectations, deadlines and RPCI policies. Students received training in responsible conduct of research, chemical safety and, where appropriate, radiation safety training. Students received training certificates to document completion. *Prostate Cancer Scholars* attended and participated scheduled and required co-curricular learning and professional development activities. They attended and participated in weekly seminars, the 2015 RPCI Science Retreat, a field trip to Zeptomatrix® (a local biotechnology company), Friday afternoon seminar series and near-peer cross-training activities. The Friday afternoon seminar series consisted of trending topics on cancer health disparities and translational research. Presentations were also given on principles in scientific communication including: critically reading a scientific paper, interpreting different types of data sets and presenting a scientific talk. Specific to the RHPCS program, *Prostate Cancer Scholars* were invited to attend the GU Program seminar. In addition, mentors involved students in laboratory meetings. Students presented ten minute talks of their research projects at the summer program scientific conference with their peers and were judged by a panel of faculty and students in order to be considered for an "Outstanding Scientific Talk" award. They also attended an extramural Biomedical Research day conference where they presented posters with peers from undergraduate research programs hosted at academic and research centers in the Buffalo area. Students participated in organized social activities to bond with their peers in the program and explore Buffalo, NY. Students reported on program satisfaction, career/education intentions and skills-attainment by responding to a pre-/post-internship program survey.

Significant results and key outcomes- Three of the four tele-mentored Howard University non-honors juniors completed a mentored summer research experience. One student withdrew from the summer program a week prior to the start date citing personal reasons. Prostate Cancer Scholars reported their summer research in a capstone ten-minute talk and scientific poster presentation at the end of summer conference.

The following are research projects presented by Prostate Cancer Scholars:

- 1.) Ennessa Currey**, M Campbell, *Dept. Pharmacology and Therapeutics*, “Antagonizing microRNA-96 as a chemo-sensitizing strategy in prostate cancer cells”
- 2.) Christian Bradley**, N. Sabnis, K. Gangavarapu, W. Huss, *Dept. Pharmacology and Therapeutics* “Inhibition of androgen efflux by ABCG2 pumps causes differentiation in CWR-R1”
- 3.) Brittney Morning**, M. Fiandalo, E. Pop, J. Mohler, *Dept. Urology*, “Adrenal Androgens Increase CWR22 Growth and Provide Resistance to ADT”

Goals not met.

Two students in the *2014 juniors cohort* withdrew at different stages from the program in PGY1 causing us to fall short of the target enrollment. Four juniors were accepted into the program and completed the one semester tele-mentored directed readings; however, one student left the program a week prior to the start of the summer research experience because of cited personal matters. One of the *2014 cohort honors sophomores* declined her acceptance to the program.

What opportunities for training and professional development has the project provided? Prostate Cancer Scholars engaged in professional development activities throughout the different phases of the program to date. They participated in tele-mentoring activities in which they received one-on-one mentoring to develop a knowledge base in their particular field and developed skills in critical review of literature, identifying gaps in scientific knowledge and developing hypotheses and projects to address these gaps. During the summer program, students received training in managing, leading and reporting results in a formal manner on a research project. They developed scientific communication skills by receiving advisement in preparing and delivering oral and poster presentations to different audiences.

How were the results disseminated to communities of interest?

Nothing to report.

What do you plan to do during the next reporting period to accomplish the goals?

Below are stated the goals for the next reporting period and the accompanying to meet the goals of enrolling and progressing students through the phases of the research experience program.

SOW-Specific aim 1: Encourage undergraduate students at Howard University to pursue graduate training in prostate cancer research. Applicants in the PGY2 recruitment cycle will be matched with mentors and enrolled in the program. The PGY3 recruitment trip to Howard University will be planned for early Fall of 2016 to promote

the program to non-honors juniors to enroll in a one semester Spring internship in 2017 to satisfy any unfilled internship slots for PGY3.

SOW-Specific aim 2: Prepare Prostate Cancer Scholars for mentored research experiences at RPCI.

Tele-mentorships for the spring 2016 semester will be arranged for 2015 cohort honors sophomores who are accepted in PGY2. An orientation will be provided on the tele-mentored Directed Readings to faculty mentors by the HU faculty advisor Dr. Anna Allen at the beginning of the spring 2016 semester. The Project Director and HU faculty advisor will coordinate and conduct a web conference with RPCI mentoring faculty members to both introduce to and familiarize them with course syllabus, expectations and grading rubric for the Directed Readings course sequence. Training in the use of the web conferencing software will be provided by the Project Director at the beginning of the 2016 spring semester.

SOW-Specific aim 3: Provide mentored research, scholarly and professional development experiences.

Prostate Cancer Scholars in the 2014 cohort honors sophomores will complete their third semester of tele-mentored readings in the spring 2016 semester and will participate in the summer research experience. Students will receive a mentored research experience and attend a required schedule of co-curricular activities.

SOW-Specific Aim 4: Test value of RHPCS Program to encourage interns to enter graduate training and careers in prostate cancer research.

In November, the PD, PI and HU faculty advisor will arrange for students to attend and present at the *2015 Society for Basic Urology Research Conference in Fort Lauderdale, Florida*. To test the value of the RHPCS program and measure the effectiveness in meeting the objective of encouraging entry into graduate training, the PD will coordinate the administration of a survey with the HU faculty advisor Howard University Faculty Advisor to have students in the 2014 junior cohort report on confirmed education plans and the past academic year's mentored professional activities in April 2016.

4. Impact:

Seven students from URM populations have received experience, knowledge and skill development in various stages of formulating and conducting a prostate cancer research project.

What was the impact on the development of the principal discipline(s) of the project?

Nothing to report

What was the impact on other disciplines?

Nothing to report.

What was the impact on technology transfer?

Nothing to report.

What was the impact on society beyond science and technology?

Nothing to report.

5. Changes/Problems.

Changes in approach and reasons for change

Nothing to report.

Actual or anticipated problems or delays and actions or plans to resolve them.

The program has experienced attrition and is projected to be short of our targeted enrollment total. We placed four students instead of five in our *2014 juniors cohort* for PGY1. Three of these four students continued through the completion of the summer research program. One withdrew a week prior to the start of the summer internship program citing personal family matters for not being able to continue. One student declined their acceptance into the program from amongst the *2014 cohort honors sophomores*. This resulted in an enrollment class of four students instead of the target five. We have received a less than expected number of applications from Honors Sophomores in the most recent recruitment cycle (PGY2) which leads us to project a shortfall of three students in this cohort for conducting summer internships in PGY3. Our coordinating faculty advisor at HU cited a large number of international students amongst the applicant class who are ineligible to apply.

We propose to make up these shortages in summer internship placements by offering two summer internships to a *Prostate Cancer Scholar* and by expanding our applicant pool beyond students enrolled in the Honors program at HU.

Below are details of these two proposed strategies to fulfill our planned program enrollment:

1.) We propose to give the option to 2015 cohort honors sophomores accepted in PGY2 to conduct two summer research experiences instead of one. This strategy would satisfy two currently vacant summer internship positions. The additional research experience would occur in the summer following their sophomore year after one semester of tele-mentored Directed Readings. They would then conduct the next two semesters of tele-mentored directed readings and their second summer research experience after their junior year as originally planned. Sequential summer research experiences will benefit both *Prostate Cancer Scholar* and mentor by enhancing mastery of research skills and increasing productivity on their project. There is also evidence suggesting that multiple short-term research experiences enhance the inclination of undergraduates to enter graduate training (Pender et al. 2010.)

2.) We propose to expand the application pool by inviting *non-honors* sophomores to apply in the Spring semester of PGY2. Under this new program structure, these students would conduct a two-sequence pre-internship tele-mentored reading course in

the fall and spring semester of their junior year and enroll in the summer research program at the end of their junior year.

Since these strategies change the scope of our program plan in the SOW we will request these changes in writing from our Program Officer to receive approval before implementing. Below on page 16 is a table reflecting the projected changes in enrollment which would occur by implementing the strategies above. For the sake of spacing and formatting the table a single column named: '*Internships & Conference Presentation*' encompasses two program phases: summer research internship phase and extended mentoring (presentation at a scientific conference.)

	Grant Year 1 (2014-2015)				Grant Year 2 (2015-2016)				Grant Year 3 (2016-2017)			
	Applied	Offers	Tele-Mentored	Internships & Conference Presentation	Applied	Offers	Tele-Mentored	Internships & Conference Presentation	Applied	Offers	Tele-Mentored	Internships & Conference Presentation
2014 cohort honors sophomores	7	5	4	n/a			4 projected	4 projected				
2014 cohort juniors	4	4	4	3								
Year Totals	9	8	8	3								
2015 cohort honors sophomores					2	2	2 projected	2* <i>proposed</i>			2 projected	2 projected
2015 cohort juniors					1	0						
2015 cohort non-honors sophomores						3** <i>proposed</i>					3** <i>proposed</i>	3** <i>proposed</i>
Year Totals							6 projected	4 projected 6 under proposed changes				
2016 cohort honors sophomores												
2016 cohort juniors											1 projected	1 projected
Year Totals											3 projected 6 under proposed changes	3 projected 6 under proposed changes
Cumulative Multi-Year Totals			8	3			14 projected	7 projected 9 under proposed changes			19 projected 20 under proposed changes	10 projected 15*** under proposed changes

* Under proposed plan to permit honors sophomores to intern *both* after their sophomore and junior years.

** Under proposed plan to recruit additional non-honors sophomores during the spring semester to conduct two semesters of tele-mentorship in their junior year for credit in non-honors Special Topics courses.

*** 15 internship slots Includes 2 proposed students who will intern for two summers, thus 13 students will interned.

Changes that had a significant impact on expenditures.

Three *Prostate Cancer Scholars* participated in the PGY1 stipend-supported summer research experience and will receive funds to travel to the SBUR conference in the fall. This number of students is two short of our budgeted five summer internship positions and results in an underspending in stipends and travel for these two positions:

Budgeted- 5 Prostate Cancer Scholars x (\$6000 stipend + \$600 travel) = \$33,000

Expensed-3 Prostate Cancer Scholars x (\$6000 stipend +\$600 travel) = \$19,800

*Difference: **+\$13,200***

Significant changes in use or care of human subjects, vertebrate animals, biohazards, and/or select agents

Nothing to report.

Significant changes in use or care of human subjects

Nothing to report.

Significant changes in use or care of vertebrate animals.

Nothing to report.

Significant changes in use of biohazards and/or select agents

Nothing to report.

6. Products:**Publications, conference papers, and presentations**

Nothing to report.

Journal publications.

Nothing to report.

Books or other non-periodical, one-time publications.

Nothing to report.

Other publications, conference papers, and presentations.

Nothing to report.

Website(s) or other Internet site(s)

Nothing to report.

Technologies or techniques

Nothing to report.

Inventions, patent applications, and/or licenses

Nothing to report.

Other Products

Nothing to report.

7. Participants & Other Collaborating Organizations.

What individuals have worked on the project?

Name:	<i>Wendy Huss, PhD</i>
Project Role:	<i>PI</i>
Researcher Identifier (eRA Commons)	<i>WENDYHUSS</i>
Nearest person month worked:	<i>.6</i>
Contribution to Project:	<i>Dr. Huss provided oversight to program recruitment and operations with the Co-PI, Program Director and Faculty Advisor. She promoted the program through recruitment trips to Howard University. She mentored a Prostate Cancer Scholar for 1 spring semester tele-mentorship and hosted her for the summer research project. Dr. Huss participated in the review of applicants and their selection the program to ensure that the applicant pools and admitted Prostate Cancer Scholars meet DOD Summer Research Prostate Cancer Training grant goals. She is working with the Faculty Advisor to arrange for Prostate Cancer Scholars to attend the Society for Basic Urologic Research.</i>
Funding Support:	

Name:	<i>Richard Hershberger, PhD</i>
Project Role:	<i>Co-PI</i>
Researcher Identifier (eRA Commons):	<i>HershbergerRP</i>
Nearest person month worked:	<i>.6</i>
Contribution to Project:	<i>Dr. Hershberger managed his department's resources to provide necessary staff and institutional support for the operation of the RHPCS program to achieve its year one goals. He provided supervision to the PD in operations of the program: recruitment, application and summer program operations. He also shared roles with the PI to conduct recruitment visits.</i>

Funding Support:	<i>No support requested.</i>
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Name:	<i>Adam Kisailus, PhD</i>
Project Role:	<i>Project Director</i>
Researcher Identifier :	<i>KISAILUS</i>
Nearest person month worked:	<i>.6</i>
Contribution to Project:	<i>Dr. Kisailus maintained the program web presence, advertised the program and conducted program informational sessions at recruitment visits. He manages logistics and provides training for web conferencing software used in tele-mentoring. He scheduled planned and executed day-to-day operations of the summer research experience program.</i>
Funding Support:	

Name:	<i>Anna Allen, PhD</i>
Project Role:	<i>Faculty Advisor</i>
Researcher Identifier :	<i>AKALLEN10</i>
Nearest person month worked:	<i>.6</i>
Contribution to Project:	<i>Dr. Allen assisted in coordination of recruitment activities, directed the tele-mentored Directed Readings course, assisted in promotion of the program which included coordinating the annual visits the RPCI project leadership team and an RPCI prostate cancer researcher to give a lecture and information sessions on the program to target undergraduate audiences at Howard University. She arranged and conducted an informational webinar with RPCI mentors to review the Directed Readings course syllabus, assessment and student expectations. She assisted the PD in monitoring progress of the tele-mentorships and ensured students were evaluated at the end of the course by their RPCI mentors.</i>
Funding Support:	

Has there been a change in the active other support of the PD/PI(s) or senior/key personnel since the last reporting period?

Previously pending grants are now active for Dr. Richard Hershberger (co-PI) and Dr. Adam Kisailus (PD). The Other support documents with the annotations are attached as appendices.

There are no changes to report for Dr. Wendy Huss (PI).

What other organizations were involved as partners?

Organization Name: Howard University

Location of Organization: Washington D.C.

Partner's contribution to the project:

Facilities: N/A

Collaboration: Dr. Anna Allen, a faculty member at Howard University, serves as Faculty Advisor for the RHPCS program and assists the PD in coordinating recruitment visits, program promotion amongst Howard University students and orientation for the tele-mentoring. She advised students and RPCI faculty mentors on the requirements of the Directed Readings course and registered submission of course grades and monitors student progress.

Personnel exchanges: The program exclusively recruited from Howard University biology students which generated the applicant pool for the RHPCS program.

Other. N/A

8. Special Reporting Requirements

COLLABORATIVE AWARDS: N/A

QUAD CHARTS: N/A

9. Appendices:

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APPENDIX A

List of abbreviations used:

Department of Defense- **DOD**

Genitourinary-**GU**

Historically Black College or University- **HBCU**

Howard University- **HU**

Project Director- **PD**

Project Year- **PGY**

Principal Investigator- **PI**

Roswell Park/Howard University Prostate Cancer Scholars Program- **RHPCS**

Society of Basic Urologic Research- **SBUR**

Statement of Work- **SOW**

Under-represented Minority- **URM**

APPENDIX B

References:

1. Pender M, Marcotte DE, Sto. Domingo MR, Maton KI. The STEM Pipeline: The Role of Summer Research Experience in Minority Students' Ph.D. Aspirations. *Education policy analysis archives*. 2010;18(30):1-36.

APPENDIX C

OTHER SUPPORT – Hershberger, Richard P.

Active Support (New Support is Italicized):

Title: ***Roswell Park Summer Internship Programs in Cancer Sciences and Oncology***

Time Commitment: 1.2 calendar months/year (PI)

Supporting Agency: National Cancer Institute (application number 1 R25 CA181003-01)

Funding Agency's Procuring contracting/Grants Officer: Jeannette Korczak, korczakj@mail.nih.gov

Performance Period: 9/01/14 – 8/31/19

Overlap: Dr. Hershberger will oversee, both the general internship programs (Summer Research Experience Program in Cancer Science, Howard Cancer Scholars Program, for undergraduates in fields throughout cancer) and the proposed Howard/Roswell Park Prostate Cancer Scholars Program (matching Howard students interested in prostate research selectively with prostate researchers, with additional prostate-specific programming). Some aspects of program administration: (maintenance of online application portal, alumni assessment, planning and delivery of summer co-curricular lectures) will be shared between the NCI- and DoD-funded programs. Students supported under this DoD grant would not receive support under the NCI R25 grant (if funded), but would instead represent an increase in the number of available funded undergraduate internship slots at RPCI.

Level of Funding: \$ 1,609,782

1. Project Goals:

2. The overall objective of this project is to provide the cancer workforce of the future by encouraging students at key career decision points to pursue careers in cancer research, oncology, and academic medicine. This is done through three project components:
- Summer Research Experience Program in Oncology, an eight-week internship open to medical, dental, and physician assistant students.
 - Summer Research Experience Program in Cancer Science, a ten-week internship open to undergraduate students entering their senior year.
 - Howard/Roswell Park Cancer Scholars Program, a tele-mentoring program that pairs Howard University Biology Department Honors Program students with Roswell Park faculty for web-based tele-mentoring within their required Directed Readings courses.

3. Specific Aims:

Aim 1: Encourage students in medical, dental, and physician assistant programs to pursue a career within oncology and academic medicine.

Aim 2: Encourage undergraduate students to pursue graduate training in cancer biology or other biomedical sciences or professional training in clinical oncology.

Aim 3: Introduce future clinicians and researchers to the continuum of translational cancer research through near-peer mentorship.

Aim 4: Test the value of in-depth pre-internship reading and mentorship on the success and productivity of a summer undergraduate internship via the Howard/Roswell Park Cancer Scholars Program.

Title: Roswell Park Cancer Institute CURE Supplement

Time commitment: 0.6 calendar months/year (Chief Academic Officer)

Supporting Agency: National Cancer Institute (supplement to CCSG application P30 CA016056)

Funding Agency's Procuring contracting/Grants Officer: Alison Lin, alison.lin@nih.gov

Performance Period: 07/01/2014 – 04/31/2019

Level of funding: \$375,000

Overlap: Dr. Hersberger will oversee, both the general internship programs (Summer Research Experience Program in Cancer Science, CURE Program, Howard Cancer Scholars Program, for undergraduates in fields throughout cancer) and the proposed Howard/Roswell Park Prostate Cancer Scholars Program (matching Howard students interested in prostate research selectively with prostate researchers, with additional prostate-specific programming). Some aspects of program administration: (maintenance of online application portal, alumni assessment, planning and delivery of summer co-curricular lectures) will be shared between the NCI- and DoD-funded programs. Students supported under this DoD grant would not receive support under the CURE Supplement grant (if funded), but would instead represent an increase in the number of available funded undergraduate internship slots at RPCI.

Project goals: The major goals of this project are to enhance minority access to transformative research experiences by providing paid summer research internships for minority and disadvantaged undergraduates and high school students, and ultimately increasing minority representation in cancer research careers. This is accomplished through the following aims:

Aim 1: Educate students about cancer biology, cancer medicine, and cancer health disparities.

Aim 2: Equip students with research, critical thinking, and science communication skills.

Aim 3: Encourage entry and retention into undergraduate and graduate biomedical training programs and cancer careers.

COMPLETED

None in past five years

PENDING

None.

OTHER SUPPORT – Kisailus, Adam E.

ACTIVE (New support is italicized)

Title: **Roswell Park Summer Internship Programs in Cancer Sciences and Oncology**

Time Commitment: 3.0 calendar months/year (Co-PI and Project Director)

Supporting Agency: National Cancer Institute (application number 1 R25 CA181003-01)

Funding Agency's Procuring contracting/Grants Officer: Jeannette Korczak, korczakj@mail.nih.gov

Performance Period: 9/01/14 – 8/31/19

Overlap: Dr. Kisailus will administer, in parallel, both the general internship programs (Summer Research Experience Program in Cancer Science, CURE Program, Howard Cancer Scholars Program, for undergraduates in fields throughout cancer) and the proposed Howard/Roswell Park Prostate Cancer Scholars Program (matching Howard students interested in prostate research selectively with prostate researchers, with additional prostate-specific programming). Some aspects of program administration: (maintenance of online application portal, alumni assessment, planning and delivery of summer co-curricular lectures) will be shared between the NCI- and DoD-funded programs. Students supported under this DoD grant would not receive support under the NCI R25 grant (if funded), but would instead represent an increase in the number of available funded undergraduate internship slots at RPCI.

- Level of Funding: \$ 1,609,782

Project Goals:

The overall objective of this project is to provide the cancer workforce of the future by encouraging students at key career decision points to pursue careers in cancer research, oncology, and academic medicine. This is done through three project components:

- Summer Research Experience Program in Oncology, an eight-week internship open to medical, dental, and physician assistant students.
- Summer Research Experience Program in Cancer Science, a ten-week internship open to undergraduate students entering their senior year.
- Howard/Roswell Park Cancer Scholars Program, a tele-mentoring program that pairs Howard University Biology Department Honors Program students with Roswell Park faculty for web-based tele-mentoring within their required Directed Readings courses.

Specific Aims:

Aim 1: Encourage students in medical, dental, and physician assistant programs to pursue a career within oncology and academic medicine.

Aim 2: Encourage undergraduate students to pursue graduate training in cancer biology or other biomedical sciences or professional training in clinical oncology.

Aim 3: Introduce future clinicians and researchers to the continuum of translational cancer research through near-peer mentorship.

Aim 4: Test the value of in-depth pre-internship reading and mentorship on the success and productivity of a summer undergraduate internship via the Howard/Roswell Park Cancer Scholars Program.

Title: **Roswell Park Cancer Institute CURE Supplement**

Time commitment: 1.2 calendar months/year (Assistant Dean)

Supporting Agency: National Cancer Institute (supplement to CCSG application P30 CA016056)

Funding Agency's Procuring contracting/Grants Officer: Alison Lin, alison.lin@nih.gov

Performance Period: 07/01/2014 – 04/30/2019

Level of funding: \$375,000

Overlap: Dr. Kisailus will administer, in parallel, both the general internship programs (Summer Research Experience Program in Cancer Science, CURE Program, Howard Cancer Scholars Program, for undergraduates in fields throughout cancer) and the proposed Howard/Roswell Park Prostate Cancer Scholars Program (matching Howard students interested in prostate research selectively with prostate researchers, with additional prostate-specific programming). Some aspects of program administration: (maintenance of online application portal, alumni assessment, planning and delivery of summer co-curricular lectures) will be shared between the NCI- and DoD-funded programs. Students supported under this DoD grant would not receive support under the NCI CURE supplement grant (if funded), but would instead represent an increase in the number of available funded undergraduate internship slots at RPCI.

Project goals: The major goals of this project are to enhance minority access to transformative research experiences by providing paid summer research internships for minority and disadvantaged undergraduates and high school students, and ultimately increasing minority representation in cancer research careers. This is accomplished through the following aims:

Aim 1: Educate students about cancer biology, cancer medicine, and cancer health disparities.

Aim 2: Equip students with research, critical thinking, and science communication skills.

Aim 3: Encourage entry and retention into undergraduate and graduate biomedical training programs and cancer careers.

COMPLETED

None in past five years

PENDING

None.